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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/665,229	09/18/2000	John M. Slater	LIT-PI-478	4669

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EXAMINER
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DANG, HUNG Q

ART UNIT	PAPER NUMBER
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2635

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/665,229

Applicant(s)

SLATER ET AL.

Examiner

Hung Q Dang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 42 and 55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 42, claim 42 claims "said reader storing said corresponding value of the moisture content of the zone of interest, said corresponding value of the moisture content of the zone of interest comprising a **moisture map** of the zone of interest". From page 13 lines 8-9 and page 23 lines 8-18 in the specification, examiner does not clearly understand how a **moisture map** of the zone of interest would be able to derived by knowing the corresponding value of the moisture content. Therefore, for examination purpose, examiner treats this limitation (moisture map) as moisture content in the soil.

Regarding claim 55, claim 55 claims that the "establishment of said inductive couple is facilitated by **transporting said at least one probe** into operative communication with said reader". The specification of this application does not provide support for this claimed limitation as to how said probe can be transported, since said

probe is implanted into soil. Therefore, examiner does not clearly see how this process can be done.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 28 recites the limitation "wherein **said** at least one remote site" in claim

20. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by  
Schuermann et al. U.S. Patent 5,053,774.

Schuermann et al. teaches a data acquisition and telemetry system (column 2 line 58-column 3 line 30), comprising:

- At least one probe in communication with at least one medium of interest; and
- A reader, said reader transmitting at least one excitation signal having at least an energy component to said at least one probe, said at least one probe using said energy component of said excitation signal to measure at least one medium of interest; and transmit at least one data signal, said at least one data signal being received by said reader.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-4, 6-8, 10-15, 17-28, 30-33, 41-43, 46, and 53-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann et al. U.S. Patent 5,053,774 in view of Hirsch U.S. Patent 4,396,149.

Regarding claims 6, 10-12, 16, 17, 30, 33 and 41, as mentioned above, Schuermann et al. teaches a probe for use in conjunction with a reader to facilitate measurement of a medium of interest, which comprises a body and at least one electronic circuit attached to said body and being in operative communication with said medium, said at least one electronic circuit using an energy component of an excitation signal transmitted to the probe by the reader to measure the content of said medium and to transmit a data signal to the reader, said data signal indicate desired data from said medium.

However, Schuermann et al. does not specifically teach measuring the moisture content of soil.

Hirsch teaches a probe for use in conjunction with a reader to facilitate measurement of moisture content of soil, which comprises a moisture sensor sending a data signal indicating the moisture content of the soil (column 3 lines 1-12). Said probe uses solar energy as a power source for data transmission (column 3 lines 55-62).

A skilled in the art would recognize that by using solar energy as a power source for said probe would conserve electrical power. A skilled in the art would also recognize that using a passive probe, wherein said probe is powered up by an excitation signal when interrogated by a reader as disclosed by Schuermann et al., would also be an alternative for power conservation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to alternatively provide a moisture probe and a reader, said reader transmitting at least one excitation signal having at least an energy component to said at least one probe, said at least one probe using said energy component of said excitation signal to measure at least one medium of interest; and transmit at least one data signal, said at least one data signal being received by said reader disclosed by Schuermann et al., to the system disclosed by Hirsch, in order to measure moisture in soil by using the power conservation method disclosed by Schuermann et al.

Regarding claim 27, Schuermann et al. in view of Olson teaches a system as claimed in claim 27. However, Schuermann et al. in view of Olson does not teach said reader further comprises a data link, said data link facilitating download of data obtained from said data signal to at least one remote site.

Hirsch, in the same field of endeavor, teaches that said reader further comprises a data link, said data link facilitating download of data obtained from said data signal to at least one remote site (column 4, lines 60-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide further provide a data link facilitating download of data obtained from said data signal to at least one remote site, to the system disclosed by Schuermann et al. in view of Olson, as evidenced by Hirsch, in order to further transmit measured data to a remote site (operator).

Regarding claim 28, websites have been very commonly used nowadays. Therefore, by conventionality, it would have been obvious to provide a website, which can be viewed by said remote computer.

Regarding claim 31, the electronic circuit in the probe disclosed by Schuermann et al. also includes at least one energy storage capacitor (unit 136), said at least one energy storage capacitor storing energy from said energy component and releasing stored energy when said stored energy reaches a predetermined level so as to cause at least a portion of said at least one electronic circuit to resonate and transmit said data signal (column 7 line 32 to column 8 line 6). Even though Schuermann et al. does not specifically suggest that said data signal having a frequency different than that of said excitation signal, however, it would have been obvious to one of ordinary skill in the art would recognize that using different frequencies for said data signal and said excitation signal would avoid interference for the reader because the reader might be sending out other excitation signals while the data signal is arriving.

Regarding claim 32, Schuermann et al. also teaches said data signal having the same frequency as the resonant frequency of said electronic circuit (column 8 lines 1-5 and column 9 lines 55-65).

Regarding claims 42, 54 and 55, claim 42 is rejected for the same reasons as claim 30. regarding part © of this claim, Schuermann et al. also teaches that said reader can be transported through out the zone of interest so as to place said reader in operative communication with said probe (column 2 lines 57-68).

Regarding claims 29 and 58, Hirsch does teach monitoring corresponding response by the object system (Figure 7, column 4 line 60 to column 5 line 19). Therefore, it would have been obvious to one of ordinary skill in the art to provide monitoring the corresponding response of the system disclosed by Schuermann et al., as evidenced by Hirsch, in order to monitor desired activities of said system.

9. Claims 19, 20, 53, 56, 57, 59 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann et al. U.S. Patent 5,053,774 in view of Hirsch U.S. Patent 4,396,149 and in further view of Olson U.S. Patent 5,337,957.

Regarding claims 19, 20, 53, 56, 57, 59 and 61, Schuermann et al. in view of Hirsch does not teach sending a control signal to the moisture probe (object system) to cause a corresponding response by the object system



Olson, in the same field of endeavor, teaches sending a control signal to the moisture probe (object system) to cause a corresponding response by the object system (paragraph bridging columns 2 and 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further provide sending a control signal to the object system disclosed by Schuermann et al. in view of Hirsch, as evidenced by Olson, in order to cause a corresponding response by the object system.

Claims 20 and 53 are rejected for the same reasons as claim 30

Regarding claims 18, 21-23, Schuermann et al. also teaches a modulated carrier signal for the excitation signal and the data signal (column 4, lines 14-22). Apparently, said excitation signal has to contain data regarding the identification of the transponder.

Regarding claims 13-15, 24-26 and 46, Schuermann et al. also teaches that said probe and said reader each comprise respective means for receiving and transmitting signals, said respective means for receiving and transmitting signals cooperating with each other to establish an inductive couple between said probe and said reader, said inductive couple facilitating at least transfer of data and energy between said probe and said reader (column 2 line 57 to column 3 line 30). Each of said respective means for receiving and transmitting signals also comprises at least one transmit/receive coil and one resonant antenna.

Regarding claims 2, 4, 43 and 60, modulated digital/analog carrier signal has been commonly used in wireless communication industry. Therefore, by conventionality, it would have been obvious to provide a modulated digital carrier signal

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to the system disclosed by Schuermann et al. Furthermore, obviously demodulation would be required to demodulate modulated signals.

Regarding claim 3, Schuermann et al. also teaches frequency modulation (column 10, lines 9-11).

Claim 7 is rejected for the same reasons as claim 31.

Regarding claim 8, Schuermann et al. also discloses that the excitation signal and the data signal having equal frequencies (paragraph bridging columns 1-2).

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann et al. U.S. Patent 5,053,774 in view of Hirsch U.S. Patent 4,396,149 and in further view of Yamada U.S. Patent 4,903,031.

As mentioned above, Schuermann et al. in view of Hirsch teaches a data acquisition system as claimed in claim 9. However, Schuermann et al. in view of Hirsch does not specifically teach preventing said excitation signal transmitted by said reader from received by said reader.

Yamada teaches a transmission system, which includes circuitry for blocking certain receivers from receiving transmitted signals (paragraph bridging columns 2 and 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a signal block circuitry to the transceiver (reader) of the transmission system disclosed by Schuermann et al. in view of Hirsch,

as evidenced by Yamada, in order to block said transceiver from receiving certain transmitted signals.

11. Claims 45, 47, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann et al. U.S. Patent 5,053,774 in view of Hirsch U.S. Patent 4,396,149 and in further view of McNabb U.S. Patent 5,927,603.

Regarding claim 45, as mentioned above, Schuermann et al. in view of Hirsch teaches an irrigation system as claimed in claim 45. However, Schuermann et al. in view of Olson does not specifically teach means for transporting said reader, which comprises an irrigation system.

McNabb, in the same field of endeavor, teaches an irrigation system, which includes means for transporting a reader, which also comprises an irrigation system (Figure 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide means for transporting the reader, which also comprises an irrigation system, to the irrigation system disclosed by Schuermann et al. in view of Hirsch, as evidenced by McNabb, in order to water the soil as the reader get transported through out the zone(s) of interest.

Regarding claims 47, 49 and 51, claim 47 is rejected for the same reasons as claims 42 and 45. McNabb also teaches a mobile irrigation structure having a plurality of nozzles (Figure 7, units 26) attached thereto, said plurality of nozzles being in fluid communication with a water source, and said mobile irrigation structure transporting

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said reader throughout the agricultural field so as to facilitate operative communication between said reader and said plurality of probes; and a control module (Figure 3, unit 46) is in operative communication with said reader and with said plurality of nozzles to regulate flow of water.

Regarding claim 50, obviously each nozzle has to be controlled individually in order to control the amount of water flow.

Regarding claim 52, digital/analog signals have been very commonly used nowadays. Therefore, by conventionality, it would have been obvious to provide digital excitation/data signals to the system disclosed by Schuermann et al.

12. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann et al. U.S. Patent 5,053,774 in view of Hirsch U.S. Patent 4,396,149 and in further view of McNabb U.S. Patent 5,927,603 and Wolfe, Jr. U.S. Patent 4,662,563.

As mentioned above, Schuermann et al. in view of Hirsch and McNabb teaches an irrigation system as claimed in claim 48. However, Schuermann et al. in view of Hirsch and McNabb does not specifically suggest a center pivot irrigation system.

Wolfe Jr., in the same field of endeavor, teaches a center pivot irrigation system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a center pivot irrigation system to the system disclosed by Schuermann et al. in view of Hirsch and McNabb, as evidenced by Wolfe Jr., in order to control the moisture level and water the soil from the center of the field.

13. Claims 5, 34-38, 39 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann et al. U.S. Patent 5,053,774 in view of Hirsch U.S. Patent 4,396,149 and in further view of Iltis U.S. Patent 4,683,904.

Regarding claims 34 and 39, as mentioned above, Schuermann et al. in view of Hirsch teaches a system as claimed in claim 34. However, Schuermann et al. in view of Hirsch does not teach said sensing capacitor has a capacitance, which varies according to the moisture content of the soil.

Iltis, in the same field of endeavor, teaches an irrigation control system, which includes a sensing capacitor having a capacitance, which varies according to the moisture content of the soil, and the frequency of the oscillations changes as the capacitance changes (paragraph bridging columns 2-3 and abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a sensing capacitor has a capacitance, which varies according to the moisture content of the soil, to the irrigation system disclosed by Schuermann et al. in view of Hirsch, as evidenced by Hirsch, in order to measure and transmit the moisture level of the soil.

Claim 5 is rejected for the same reasons as claim 34.

Claims 35-38, 40 and 44 are rejected for the same reasons as claim 34. Regarding claims 35 and 36, as mentioned above, Schuermann et al. also teaches said data signal having the same frequency as the resonant frequency of said electronic circuit (column 8 lines 1-5 and column 9 lines 55-65).

Claim 62 is rejected for the same reasons as claims 30 and 34.

**Conclusion**

14) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Dang whose telephone number is 703-305-1836. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik, can be reached on (703) 305-4704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Hung Dang  
6/23/2003  
H.D.

HD

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